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A NEW SPECIES OF *CASTILLEJA* SECT. *EUCHROMA* (SCROPHULARIACEAE) FROM OAXACA, MEXICO

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ABSTRACT

A previously undescribed species of *Castilleja* is recognized from near the summit of Cerro Zempoaltepetl in Oaxaca: **C. zempoaltepetlensis**. It is a member of sect. *Euchroma* (Nutt.) Benth. distinguished from relatives by its combination of thin rhizomes, sparsely pubescent leaves and stems, strongly dissected leaves and bracts, apparently whitish or yellowish calyces not narrowed at the midregion, and corollas with a densely bearded galea. The new species is most closely related to *C. tolucensis*, which also is restricted to high elevation habitats. A key is provided to eleven Mexican (mainland) species of sect. *Euchroma* with lobed or divided leaves.

KEY WORDS: *Castilleja*, Scrophulariaceae, México

Castilleja zempoaltepetlensis Nesom, *sp. nov.* TYPE: MEXICO. Oaxaca: vicinity of Cerro Zempoaltepetl, open pine forests on SE slopes of peak, ca. 3200 m, infrequently abundant only on summit, 10 Aug 1950, *B. Hallberg 898* (HOLOTYPE: LL!; Isotype: MICH!).

Castillejae tolucensi Kunth similis sed calycibus eglandulosis sparsim hispidi-pilosisque absque colore rubro, foliis 2-4 lobatis, lobis fere filiformibus apicibus acutis, et corollis calyce exsertis 8-10 mm differt.

Perennial (?) herbs arising from long, slender rhizomes, the stems and leaves with shiny surfaces, with stipitate glands and eglandular hairs. Stems 12-20 cm tall, sparsely villous with loose, spreading, vitreous hairs 0.4-1.0 mm long, some of them gland tipped, especially near the inflorescence. Leaves evenly spaced along the stems, barely or not at all subclasping, oblong-lanceo-

late, 25-30 mm long at midstem, pectinately dissected, with 2-4 pairs of linear-lanceolate lobes with an acute apex, the lowermost leaves 10-15 mm long, linear-oblong, and entire, becoming larger and more highly dissected toward the inflorescence, sparsely hispid-strigose to sparsely villous, mostly along the veins. Flowers sessile in a dense, terminal, spicate cluster, the internodes elongating in fruit. Floral bracts distinctly differentiated from the upper leaves, the lobe apices reddish, broadening and becoming rounded, the uppermost bracts obovate-spatulate with a crenate apex. Calyx apparently evenly whitish or cream, even in width from base to tip, 17-21 mm long with primary lobes 9-12 mm long and equal in length, rounded at the apex without secondary lobes, vestiture like the leaves. Corollas 27-29 mm long, the lower lip of 3, green, thickened teeth ca. 1 mm long, the galea ca. 16 mm long, yellow-green with red flanges, densely bearded near the apex, exserted 8-10 mm from the calyx. Capsules ovoid, 9-11 mm long.

Additional collection examined: MEXICO. Oaxaca: Vicinity of Cerro Zempoaltepetl, around Indian altars at the summit, in open pine woodland, ca. 3396 m, 23 Jul 1950, *Hallberg 742* (LL,MICH).

Castilleja zempoaltepetlensis is distinguished from other species of *Castilleja* sect. *Euchroma* (Nutt.) Benth. in México by its combination of thin rhizomes, sparsely pubescent leaves and stems, strongly dissected leaves and bracts, calyces of even width, apparently whitish or yellowish without red coloration, and corollas with a densely bearded galea. The two collections cited here of the new species were distributed as *C. conzattii* Fern. Both species are members of *Castilleja* sect. *Euchroma* (Nutt.) Benth. (sensu Eastwood 1909) and are superficially similar in their divided leaves. In its rhizomatous habit and calyx of even width, however, *C. zempoaltepetlensis* is similar to *C. tolucensis* Kunth, another species restricted to high elevation habitats. In México, these two species form a distinct pair apparently not closely related to any others. *Castilleja conzattii* is more closely related to *C. falcata* Eastw. and other species morphologically similar to *C. scorzoneraefolia* Kunth (Nesom 1992).

Species of sect. *Euchroma* from mainland México with lobed to divided leaves do not form a natural group, but for convenience of identification, they are grouped together in the provisional and artificial key below. The species definitions and relationships among *C. falcata*, *C. conzattii*, *C. scorzoneraefolia*, and *C. hirsuta* Mart. & Gal. are in need of detailed study.

1. Woody shrubs densely invested with dendritic hairs; central Oaxaca. ... . *C. dendridion* Nesom

1. Herbs, sometimes with slightly woody bases, sparsely to densely invested with unbranched hairs. ..... (2)

2. Calyces distinctly narrowing at ca. midlength, then broadening again toward the apex; plants arising from woody taproots. ..... (4)

2. Calyces even in width from base to apex; plants arising from slender rhizomes. ..... (3)

3. Calyx with red, densely glandular puberulent apex; leaves trilobed, lobes with rounded apices; corollas included within the calyx; Edo. México, Puebla, Veracruz (Nevado de Toluca, Ixtaccihuatl, Popocatepetl, Orizaba, Perote). ..... *C. tolucensis* Kunth

3. Calyx without red coloration, sparsely hispid-pilose, eglandular; leaves 2-4 lobed, lobes nearly filiform with acute apices; corollas exserted 8-10 mm from the calyx; Oaxaca (Cerro Zempoaltepetl). .... *C. zempoaltepetlensis* Nesom

4. Plants usually single stemmed from the base, always with an erect stem. ..... (6)

4. Plants caespitose, tending to be acaulescent. ..... (5)

5. Calyx green, the veins and lobe margins sparsely pilose with loosely spreading, vitreous hairs; leaves mostly 4-6 mm wide at midpoint; Nuevo León and Coahuila. ..... *C. bella* Standley

5. Calyx cinereous, the veins and lobe margins densely ciliate with stiffly spreading, white hairs; leaves mostly 1-3 mm wide at midpoint (below the divergence of the lobes); Hidalgo, México, Puebla. *C. moranensis* Kunth

6. Plants annual from a very slender, short taproot; Edo. México to Durango. .....(8)

6. Plants perennial with a woody, thickened root; Veracruz to Oaxaca. ..... (7)

7. Calyx with a red apex; Veracruz and Puebla (Orizaba and Perote). .... *C. falcata* Eastw.

7. Calyx completely green except for a yellow, narrow but prominent apical rim; Oaxaca. ..... *C. conzattii* Fern.

8. Calyx green with a prominently red apex; stems sparsely invested with spreading hairs, stipitate glandular hairs usually present. (10)

8. Calyx greenish to yellow, commonly without red coloration (sometimes barely red at the apex in *C. sphaerostigma*); stems with deflexed or retrorsely appressed hairs, eglandular. ..... (9)

9. Stems moderately invested with thin, antrorsely appressed hairs; basal leaves pectinately lobed, the cauline entire; floral bracts lanceolate, entire; stigmas with lobes 2 mm long; Edo. México and eastern Michoacán. ..... *C. macrostigma* B. Rob.

9. Stems densely invested (nearly floccose in the inflorescence) with relatively thick, deflexed hairs; lower and cauline leaves usually with 1-3 pairs of linear lobes; floral bracts with apex somewhat dilated and shallowly lobed or distinctly scalloped to coarsely crenate; stigmas nearly capitate (thickened and slightly notched); west central Zacatecas and adjacent Durango. ..... *C. sphaerostigma* Eastw.

10. Leaves with filiform lobes; floral bracts entire; northwestern Michoacán. ..... *C. jilquilpana* Nesom

10. Leaves with oblanceolate to spatulate lobes; floral bracts lobed; Durango. ..... *C. saltensis* Eastw.

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